

FIG.1

FUNCTION BLOCK DIAGRAM SHOWING A PLL FREQUENCY SYNTHESIZER ACCORDING TO FIRST EMBODIMENT

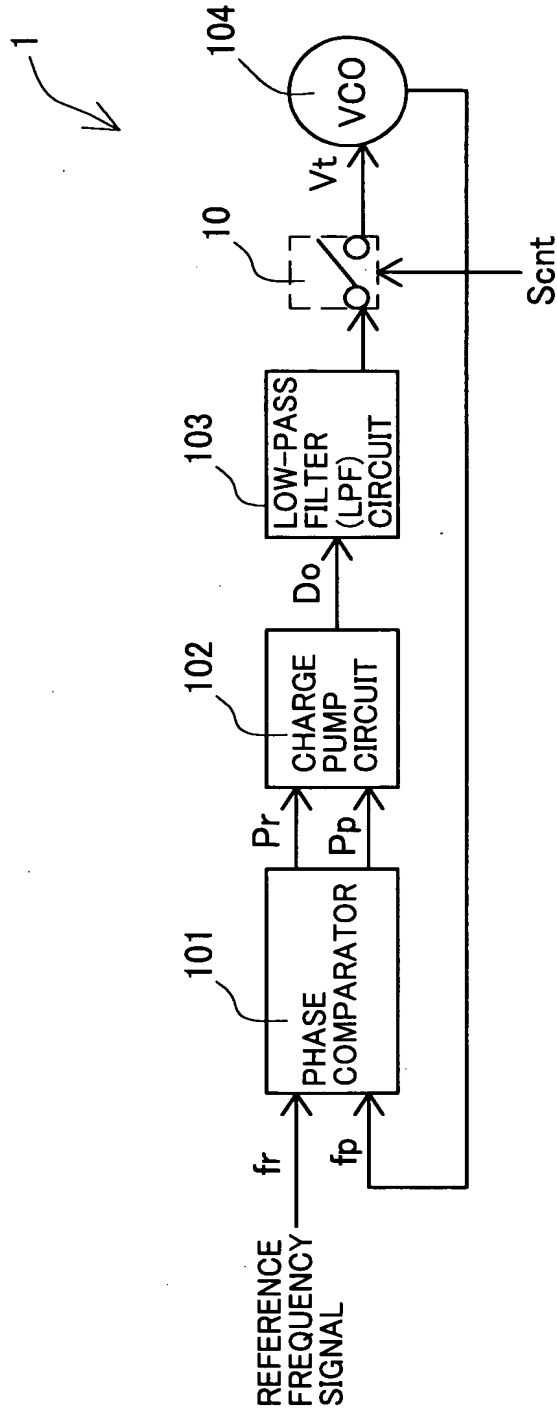


FIG.2

WAVEFORM DIAGRAM ILLUSTRATING OPERATING WAVEFORMS OF THE  
PLL FREQUENCY SYNTHESIZER ACCORDING TO FIRST EMBODIMENT

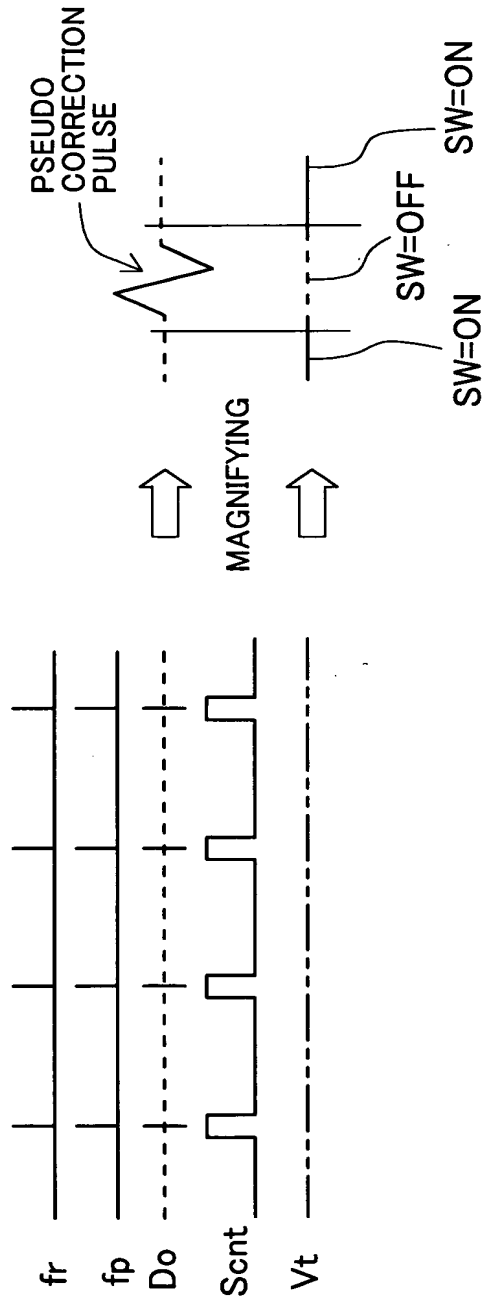


FIG.3

FUNCTION BLOCK DIAGRAM DEPICTING A SPECIFIC EXAMPLE OF THE  
PLL FREQUENCY SYNTHESIZER ACCORDING TO FIRST EMBODIMENT

1A

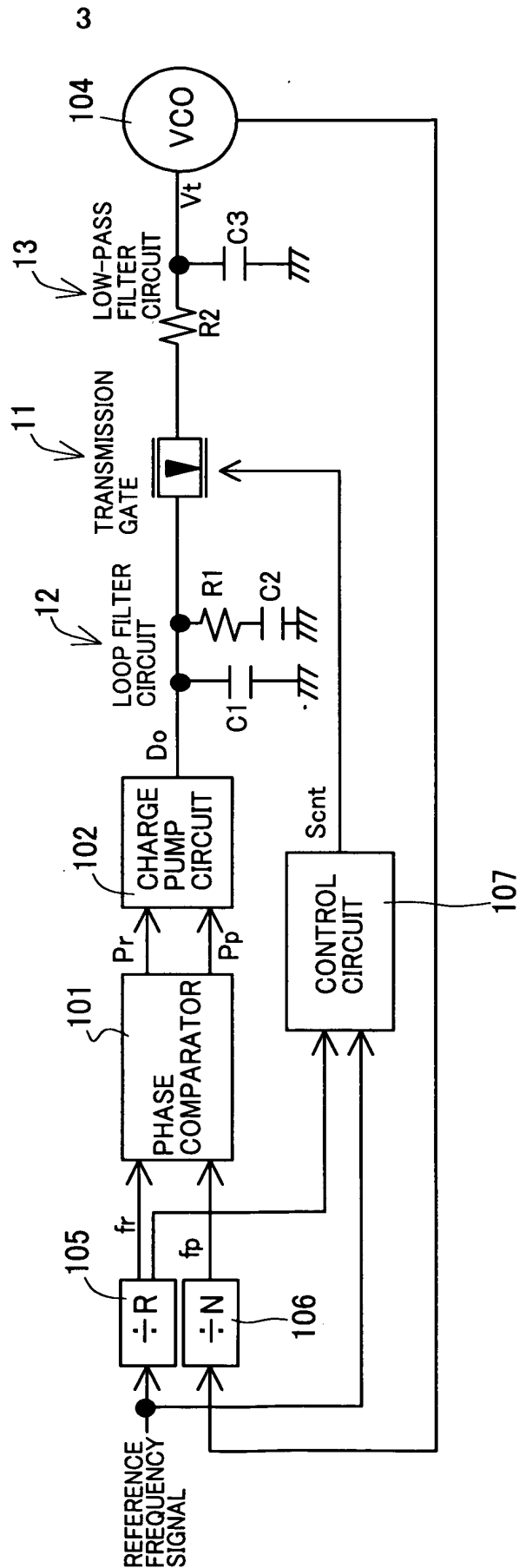
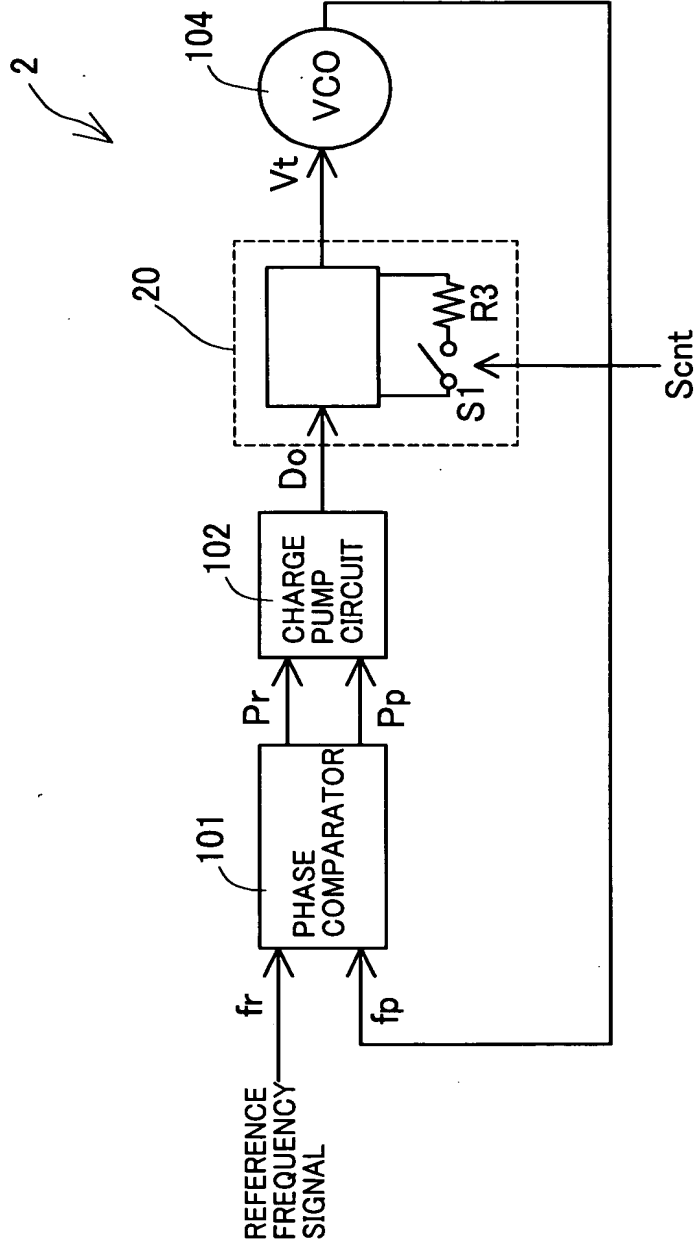


FIG.4

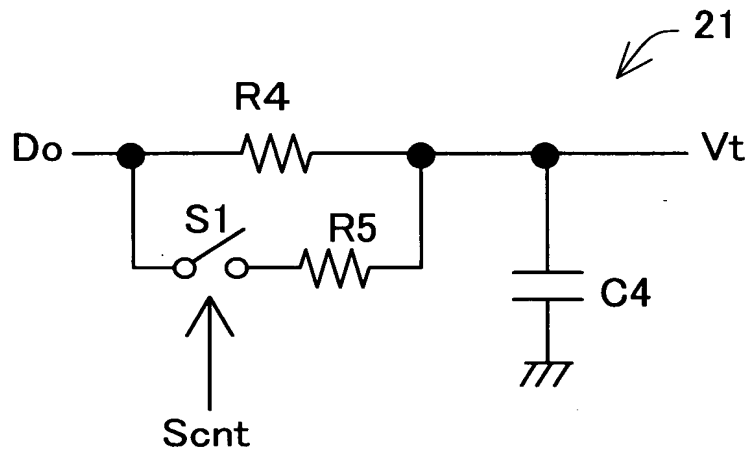
FUNCTION BLOCK DIAGRAM SHOWING A PLL FREQUENCY SYNTHESIZER ACCORDING TO SECOND EMBODIMENT



CIRCUIT DIAGRAM ILLUSTRATING SPECIFIC EXAMPLES OF  
A LOW-PASS FILTER (LPF) CIRCUIT EMPLOYED IN SECOND  
EMBODIMENT

**FIG.5A**

TYPE WHEREIN PARALLEL PATHS ARE SELECTED



**FIG.5B**

TYPE WHEREIN SERIAL PATHS ARE SELECTED

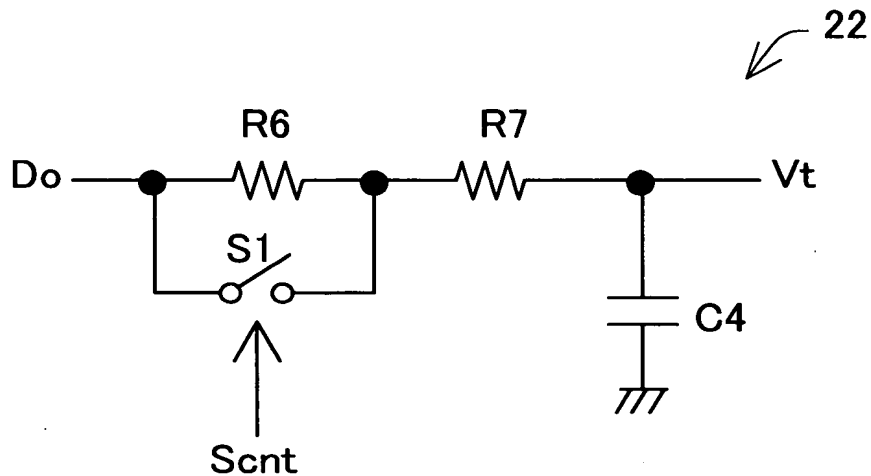


FIG.6

FUNCTION BLOCK DIAGRAM DEPICTING A PLL FREQUENCY SYNTHESIZER ACCORDING TO THIRD EMBODIMENT

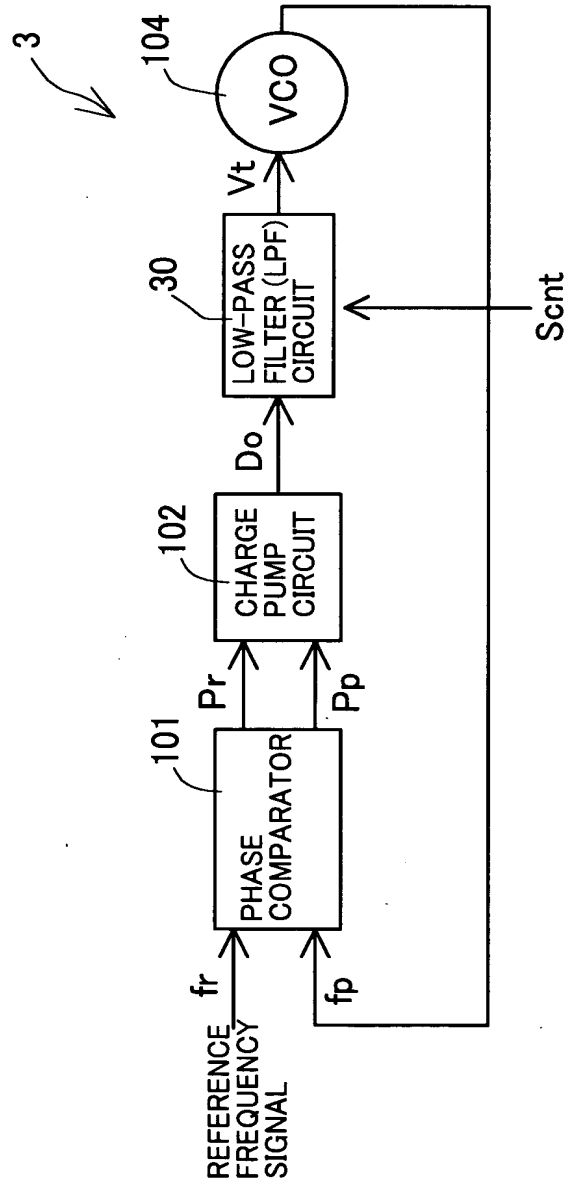
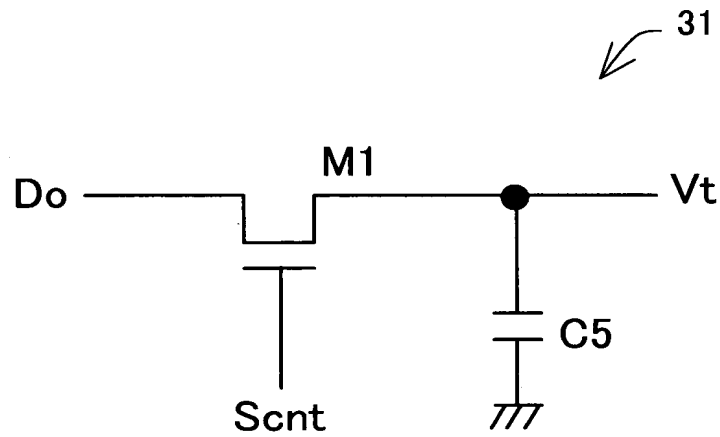


FIG.7

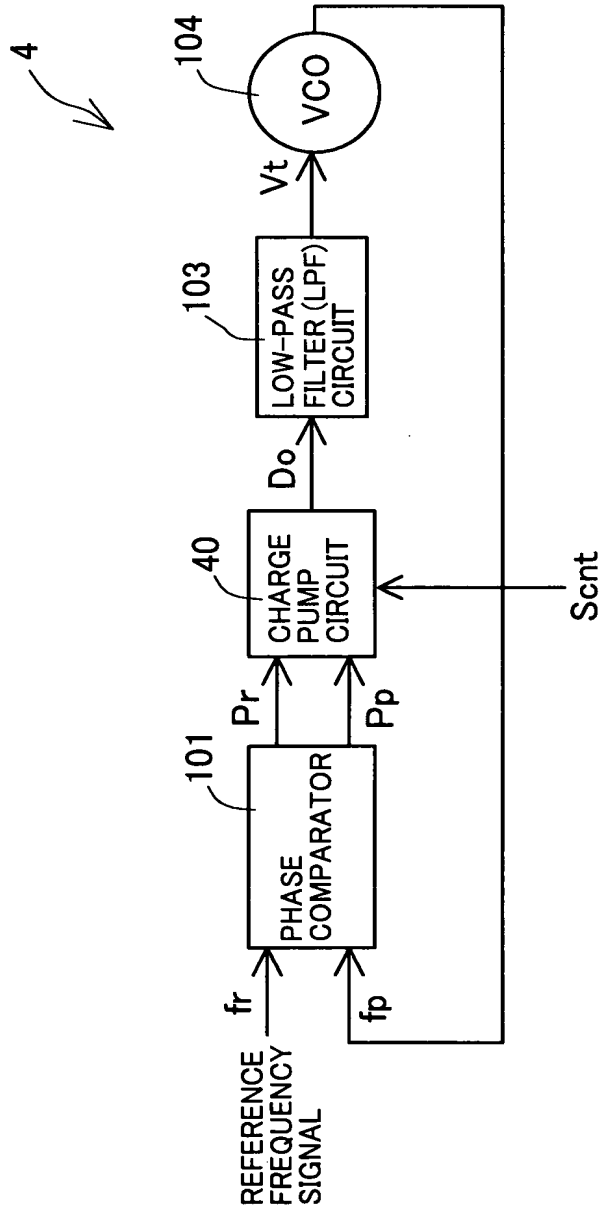
CIRCUIT DIAGRAM SHOWING A SPECIFIC EXAMPLE OF  
A LOW-PASS FILTER (LPF) CIRCUIT EMPLOYED IN  
THIRD EMBODIMENT



10026548.122701

FIG.8

FUNCTION BLOCK DIAGRAM ILLUSTRATING A PLL FREQUENCY SYNTHESIZER ACCORDING TO FOURTH EMBODIMENT

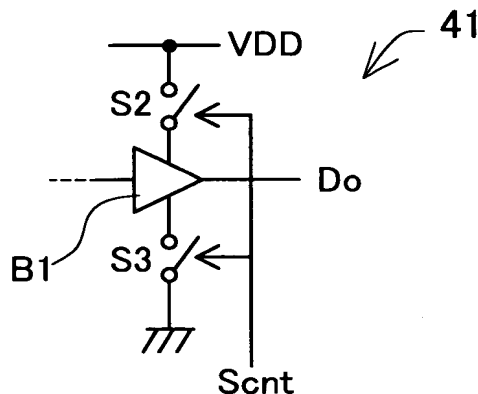




CIRCUIT DIAGRAM SHOWING SPECIFIC EXAMPLES OF A CHARGE PUMP CIRCUIT EMPLOYED IN FOURTH EMBODIMENT

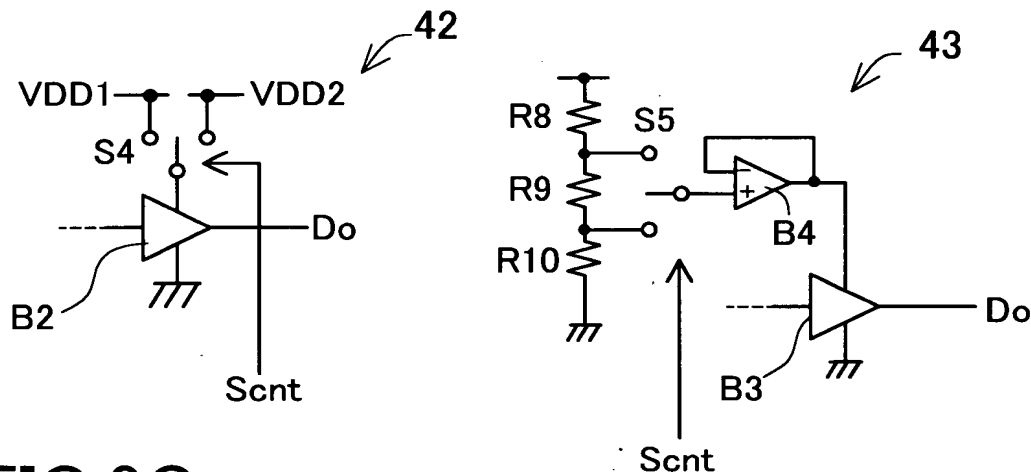
**FIG.9A**

TYPE THAT IT OPENS OR CLOSES OUTPUT PATHS



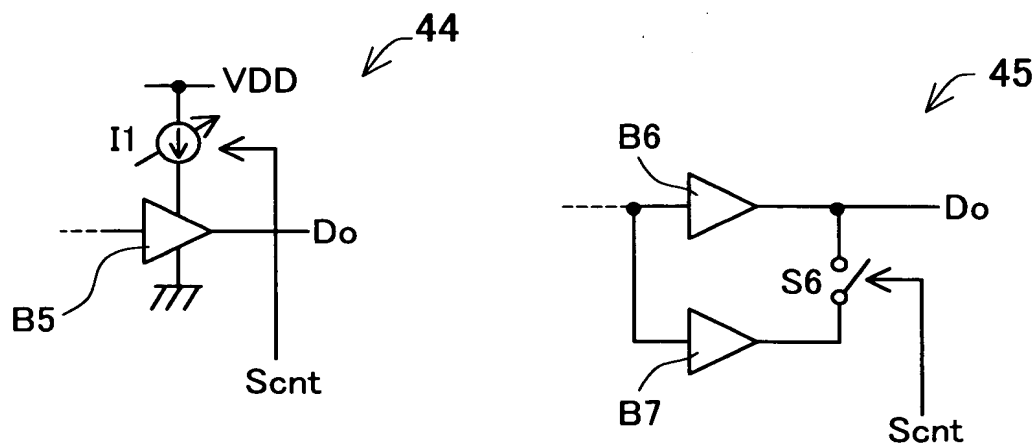
**FIG.9B**

TYPE WHEREIN SOURCE VOLTAGES ARE SWITCHED



**FIG.9C**

TYPE WHEREIN DRIVING CAPACITIES ARE SWITCHED



CIRCUIT DIAGRAM DEPICTING A SPECIFIC EXAMPLE OF  
A LOW-PASS FILTER (LPF) CIRCUIT

FIG.10A

VOLTAGE-DRIVEN TYPE

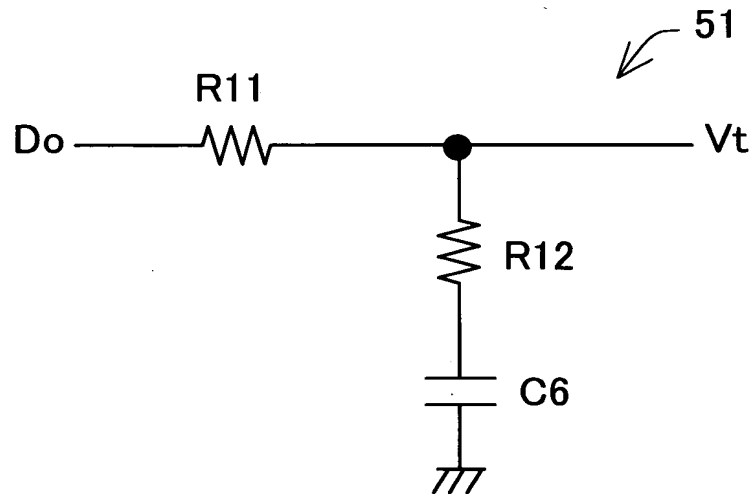
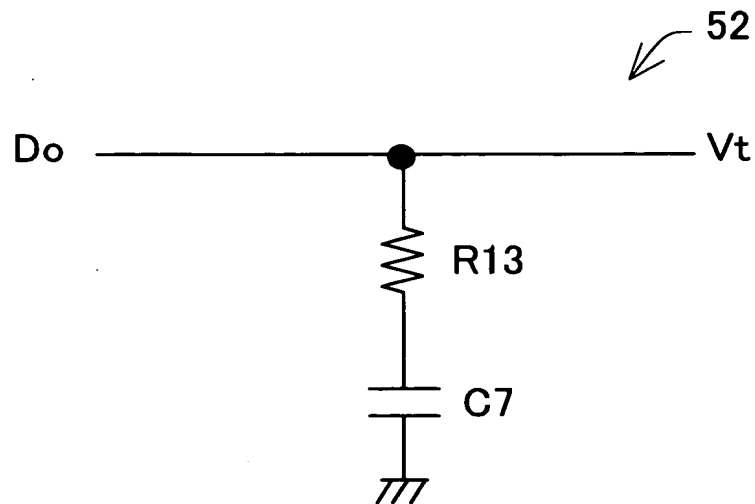


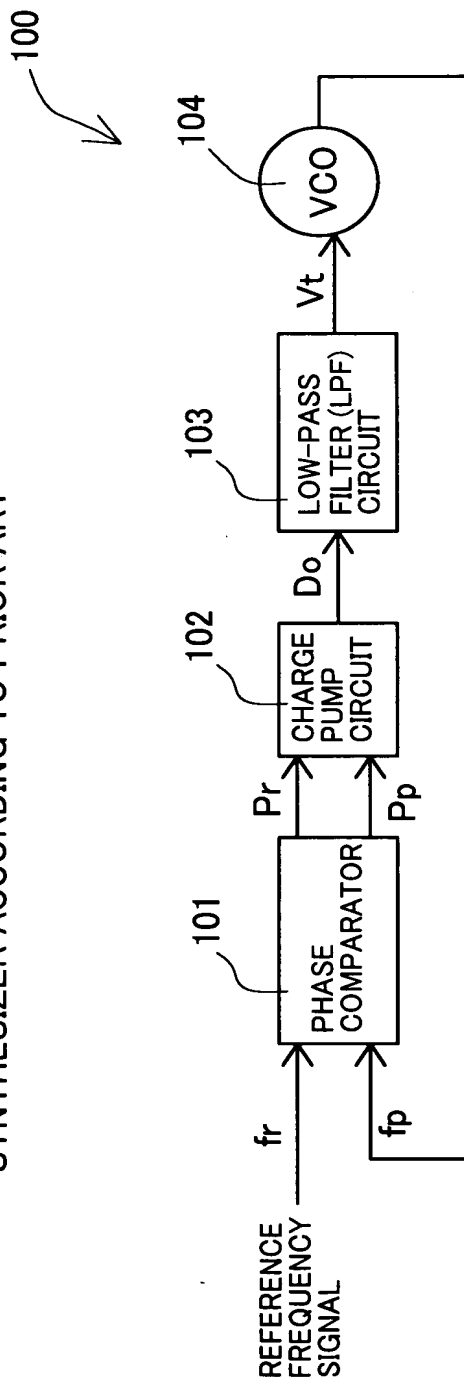
FIG.10B

CURRENT-DRIVEN TYPE



# FIG.11 PRIOR ART

FUNCTION BLOCK DIAGRAM SHOWING A PLL FREQUENCY SYNTHESIZER ACCORDING TO PRIOR ART



# FIG.12 PRIOR ART

WAVEFORM DIAGRAM ILLUSTRATING OPERATING WAVEFORMS OF THE  
PLL FREQUENCY SYNTHESIZER ACCORDING TO PRIOR ART

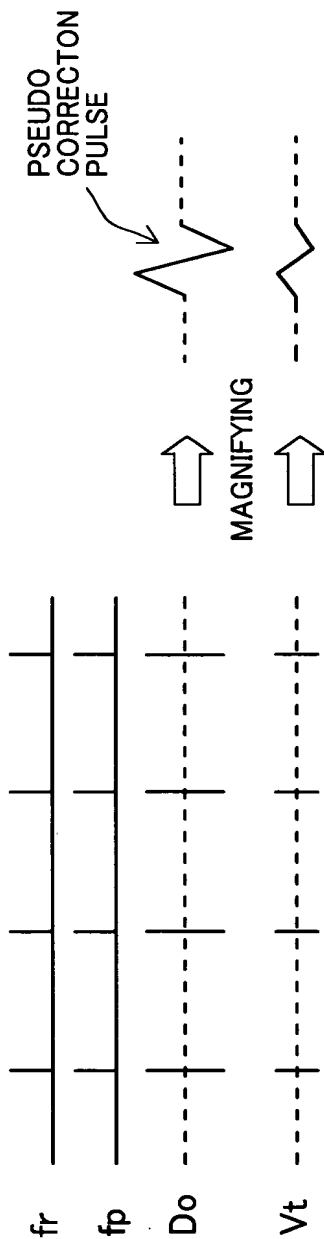
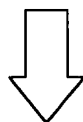
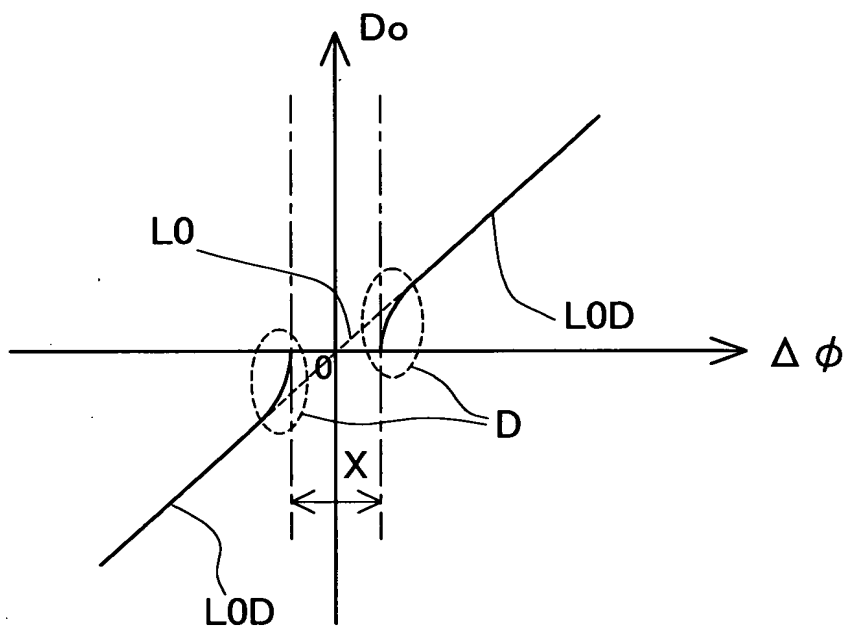


FIG.13

CHARACTERISTIC DIAGRAM SHOWING INPUT/OUTPUT CHARACTERISTICS OF A CHARGE PUMP CIRCUIT



SOLVING THE DEAD ZONAL REGION

